

REMARKS

Independent claim 9 is currently pending. Claim 9 stands finally rejected as being obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 6,539,711 to Raychinov ("Raychinov") in view of U.S. Patent No. 4,107,928 to Kelly et al. ("Kelly"). Although Kelly was previously cited as a primary reference, the Examiner now relies on Raychinov, which was not previously cited.

I. Amendments to the Claims / The Present Invention

Claim 9 has been amended, and new claims 32 and 33 have been added. No new matter has been added via these amendments to the claims.

In particular, claim 9 now recites an exchange of "a hydraulic liquid," as opposed to "fluids" in general. Support for this amendment can be found, for example, on pages 14 and 15 of the description. Claim 9 has also been amended to recite that the retardation energy is stored "in the pressure bottles of the apparatus."

In the present invention, the hydraulic liquid system 24, 25 heats up due to the combustion engine 21 it surrounds, and transmits the energy into a heat exchanger 79 and then into the tank/bottle system provided by the tank 73, the pressure bottles 60, 61, 62, and the reservoir 65. *See Fig. 3.* This aspect of the present invention may be thought of as two sub-parts, since the heat exchanger 79 can be omitted. New claims 32 and 33 expressly claim the configurations of these sub-systems.

As shown in Fig. 3, the present invention includes two distinct systems overall, and with the separation of the first one by the heat exchanger as noted above, three systems. The first system in the present invention is the heat transferral system. The heat transferral system includes the low pressure-high temperature subsystem, consisting of the first heat exchanger 24, 25 surrounding the combustion engine, the optional pump 80, and one half of the heat exchanger 79. The heat transferral system also includes the subsystem under pressure comprising the other half of the heat exchanger 79, the optional pump 77 and the reservoirs 65 and 73, as well as the pressure bottles 60, 61, 62 as storage means for heat from the motor, via valves 64, 64, and 68. The second system of the present invention relates to the retardation input and output, and includes the hydraulic pump/motor 22, turning or turned by motor 21, which is connected to the

bottles 60, 61, 62 (via valve 74) and the reservoir 65. The bottles 60, 61, 62 receive additional transformed energy through the heat transferral system.

Additional discussion of these combined systems of the present invention was included in Applicant's Amendment filed on August 16, 2010, on pages 6-7. Claim 9 (as amended) and new claims 32 and 33 reflect the combination of the multiple systems and subsystems.

II. Obviousness Rejection Over Raychinov In View Of Kelly

The Examiner argues in the Office Action that all features of the present invention are taught by Raychinov except for the combustion heat from the engine being absorbed in the pressurized liquid and the plurality of pressure bottles. The Examiner is correct that these features are not taught in Raychinov, but there is even more lack of disclosure in Raychinov that makes the obviousness rejection improper.

As a threshold matter, the Examiner's rejection to claim 9 appears to conflate the two above-described combined systems of the present invention. On pages 3-4 of the Office Action, the Examiner argues that in Raychinov, "the hydraulic liquid is pressurized by an exhausted gas powered hydraulic pump instead of the absorption of combustion heat from an engine," but that the claimed invention may be made by simply substituting a combustion engine heat source and heat exchanger for the hydraulic pump to pressurize the liquid. Even if this substitution would and could be made as the Examiner suggests, the result would at most be a heat exchanger being used to pressurize the liquid in the retardation input and output portion of the system (*i.e.*, the system including the hydraulic pump/motor 22, as discussed above). This combination would not make the claimed invention, since the heat from the engine must be used as part of the separate and distinct heat transferral system to satisfy the claims. *See* discussion above in Part I. Raychinov and Kelly do not teach or suggest the combined distinct systems of claim 9, as amended.

In particular, Raychinov simply stores retardation energy for working the auxiliary hydraulic mechanism 14 for the steering wheel. Only if high pressure above the usual functioning of the steering wheel support is reached is any additional pressure returned to the

system. A heat source (*i.e.*, combustion engine) does exist in Raychinov, but the heat of the internal combustion engine 15 rotates the gas turbine 1 and operates the hydraulic pump 2 directly. There is no storage of pressurized liquid through the pressure of the heated liquid in Raychinov, let alone in the claimed pressure bottles. Heat is used in Raychinov for turning a turbine, whereas in the present invention of claim 9 a turbine would be used only as a generator or motor for the retardation unit, and for returning the stored energy to the combustion engine device. Raychinov therefore fails to teach or suggest all of the limitations of currently amended claim 9 regarding at least the particular configuration of the hydraulic motor and pressure bottles.

The Office Action cites Kelly having a heat input device and an accumulator for the exchange of fluids, the device using a hydraulic motor for working the apparatus. In this context Kelly is very vague. The device in Kelly is merely a cylinder for effecting work. *See, e.g.* Kelly, at column 5, lines 23 to 27. There is no teaching or suggestion in Kelly to use this work within a different motor or device.

The combination of Raychinov and Kelly does not comprise a feature substitution which would be easily recognized or implemented by someone skilled in the art. The two circuit systems of the presently claimed invention are combined in a specific and nonobvious way. Even to the extent that column 2, lines 52 to 59 of Kelly might suggest that the energy of pressurized liquids can be used to turn a motor, and that the energy can be provided from different sources, there is no indication that the heat of the motor itself can be used to be stored and to turn the motor. Indeed, Kelly never mentions that the heat source can be a combustion motor since the aim of Kelly is to use solar energy, effluents from nuclear reactors, etc., which are static heat sources entirely distinct from a combustion motor.

On the other hand, Raychinov simply provides a combustion motor 15 on one side and a turbine 1 on the other side to store a pressurized liquid 3. There is no indication for someone skilled in the art that these two references can be combined, since the heating circle in Kelly is directly transformed into work for the piston 130, and Raychinov is directed only to the storage of mechanically compressed liquid. These references, alone or in combination, fail to teach or render obvious a high pressure storage circuit for heat of a combustion engine to be stored in conjunction with the retardation energy which is mechanically stored in the same

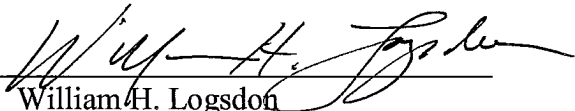
Application No. 10/593,000
Paper Dated: February 10, 2011
In Reply to USPTO Correspondence of October 12, 2010
Attorney Docket No. 0115-062668

device, via two distinct but cooperative systems as reflected in currently amended claim 9, and in new claims 32 and 33. Claim 9 is therefore patentable over the prior art of record. New claims 32 and 33, which include additional features of the particular configuration of the claimed system, are believed to be patentable for at least the same reasons.

CONCLUSION

For the foregoing reasons, Applicant respectfully requests that the rejections be withdrawn, and that all of pending claims 9, 32 and 33 be allowed.

Respectfully submitted,
THE WEBB LAW FIRM

By 
William H. Logsdon
Registration No. 22,132
Attorney for Applicant
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com